MACURCO
GAS DETECTION

TracXP™
Industrial Gas Solutions

TRACXP APPLICATION GUIDE

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• Having the right combination of an ignition source, oxygen, and fuel in a gas or vapor form provides for the necessary means to create a fire or explosion

• The minimum concentration of combustible gas or vapor necessary to support its combustion in air is defined as the Lower Explosive Limit (LEL). Below this level, the gas mixture is too "lean" to burn

• The maximum concentration of a gas or vapor that will burn in the air is defined as the Upper Explosive Limit (UEL). Above this level, the mixture is too "rich" to burn

• The range between the LEL and UEL is known as the flammable range for that gas or vapor

• Commonly encountered flammable gases include but are not limited to Acetylene, Butane, Ethylene, Hydrogen, Methane / Natural Gas, Propane, Solvent Vapors

Toxic & Combustible Gas Chart

Gas Type	Chemical Symbol	Color	Smell	Molecular Weight	Vapor Density (Air =1)	% in Atmosphere	Risks	LEL%	UEL%	Recommended Detector Mounting Height	Electro-Chemical	Catalytic	NDIR
Acetylene	C_2H_2	Colorless	Odorless	26	0.91	NA	Flammable	2.5	100	Near Ceiling		X	
Ambient Air	–	Colorless	Odorless	29	1	100%	NA	NA	NA	NA			
Ammonia	NH_3	Colorless	Pungent Odor	17	0.6	NA	Toxic	15	28	Near Ceiling	X	X	
Argon	Ar	Colorless	Odorless	39.95	1.38	.934%	Asphyxiant	NA	NA	Breathing Zone (4-6 ft)	X		
Butane	C_4H_{10}	Colorless	Odorless	58.12	2.11	NA	Flammable	1.8	8.4	~12" Above Floor		X	X
Carbon Dioxide	CO_2	Colorless	Odorless	44.01	1.52	.040%	Asphyxiant/Toxic	NA	NA	~12" Above Floor			X
Carbon Monoxide	CO	Colorless	Tasteless / No Smell	28.01	0.97	NA	Toxic/Poisonous	12.5	74	Breathing Zone (4-6 ft)	X		
Chlorine	Cl_2	Green/Yellow	Pungent Odor	35.45	2.47	NA	Toxic/Oxidizer	NA	NA	~12" Above Floor	X		
Chlorine Dioxide	ClO_2	Green/Yellow	Pungent Odor	67.45	2.33	NA	Oxidizer	NA	NA	~12" Above Floor	X		
Ethanol	C_2H_6O	Colorless	Pungent Taste	46.1	1.59	NA	Flammable	3.3	19	~12" Above Floor		X	
Helium	He	Colorless	Odorless	4.02	0.14	.00052%	Asphyxiant	NA	NA	Breathing Zone (4-6 ft)			
Hydrogen	H_2	Colorless	Odorless	2	0.7	.000050%	Flammable	4	75	Near Ceiling	X	X	
Hydrogen Chloride	HCl	Yellowish	Pungent Odor	36.46	1.27	NA	Toxic	NA	NA	~12" Above Floor	X		
Hydrogen Cyanide	HCn	Colorless	Bitter Odor	27.03	0.94	NA	Toxic/Flammable	5.4	46	Near Ceiling	X		
Hydrogen Fluoride	HF	Colorless	Irritating Odor	20.01	0.69	NA	Toxic	NA	NA	Near Ceiling	X		
Hydrogen Peroxide	H_2O_2	Colorless	Slightly Sharp Odor	34	1.1	NA	Toxic	NA	NA	~12" Above Floor	X		
Hydrogen Sulfide	H_2S	Colorless	Pungent Odor	34.08	1.19	NA	Toxic	4	44	~12" Above Floor	X		
Methane	CH_4	Colorless	Odorless	16	.55	.0002%	Flammable	5	15	Near Ceiling		X	X
Methyl Mercaptan	CH_3SH	Colorless	Rotten Odor	48.11	1.66	NA	Toxic/Flammable	4.1	21	~12" Above Floor	X		
Nitric Oxide	NO	Colorless	Sharp Odor	30	1.04	NA	Toxic	NA	NA	Breathing Zone (4-6 ft)	X		
Nitrogen	N_2	Colorless	Odorless	28.01	0.967	78.084%	Asphyxiant	NA	NA	Breathing Zone (4-6 ft)	X		
Nitrogen Dioxide	NO_2	Red/Orange	Pungent Odor	46.01	2.62	NA	Toxic/Poisonous	NA	NA	~12" Above Floor	X		
Oxygen	O_2	Colorless	Odorless	32	1.1	20.948%	Oxidizer	NA	NA	Breathing Zone (4-6 ft)	X		
Ozone	O_3	Colorless/blue	Pungent Odor	47.99	1.66	0.000006	Toxic/Oxidizer	NA	NA	~12" Above Floor	X		
Propane	C_3H_8	Colorless	Odorless	44.1	1.56	NA	Flammable	2.1	9.5	~12" Above Floor		X	X
Sulfur Dioxide	SO_2	Colorless	Pungent Odor	64.06	2.25	NA	Toxic	NA	NA	~12" Above Floor	X		

Ensuring the safety of personnel, safeguarding assets and property, and protecting the environment against chemical and gas hazards is paramount, making toxic and combustible gas detection an indispensable component of comprehensive safety programs. The presence of harmful gases poses a significant threat to human health, the environment, process integrity, and facilities underscoring the need for early leak detection through an effective monitoring system. Toxic gases, even in minute concentrations, can lead to acute and chronic health issues including respiratory disorders, burns and skin malady's, cancer, organ failure and even death. Meanwhile, combustible gases, if left undetected, may lead to catastrophic explosions or fires with devastating consequences

Early detection of these gases enables prompt intervention, allowing for timely evacuation and mitigation measures. By deploying sophisticated gas detection systems, the risk of harm can be minimized, ensuring the well-being of occupants and the preservation of property. In industrial settings, these systems are essential for maintaining a secure work environment, meeting regulatory requirements, and preventing potential disasters that may arise from the inadvertent release of hazardous gases. In essence, the incorporation of reliable gas detection technologies is a fundamental aspect of proactive risk management, contributing significantly to overall safety and the protection of both lives and assets.

HAZARDOUS LOCATIONS CLASSIFICATION

Hazardous location classification, often referred to as "hazardous area classification," is a system used to identify and categorize areas where the presence of flammable gases, vapors, liquids, combustible dust, or other hazardous materials creates a potential risk of fire or explosion. This classification is crucial for ensuring safety in various industrial and commercial settings, such as chemical plants, oil refineries, grain silos, and manufacturing facilities.

The classification process typically involves several key steps:

1. **Identify Hazardous Substances:** Determine the types of hazardous materials present in the area. These materials are typically categorized into classes, divisions, and groups based on their properties. The two primary categories are gases/vapors and combustible dust.

 • **Gases and Vapors:** These materials are classified into various groups (e.g., Group A, Group B) based on their ignition properties and characteristics.

 • **Combustible Dust:** Dusts are classified into various classes (e.g., Class II) based on their conductivity, particle size, and other factors.

2. **Determine Zone or Division:** Once you've identified the hazardous materials, you need to classify the area based on the likelihood of those materials being present and the duration of their presence. Hazardous areas are typically divided into zones or divisions:

 • **Zone System (Gas/Vapor):** In the Zone system, areas are categorized into Zones 0, 1, and 2 for gases and vapors. Zone 0 is the most hazardous, indicating the presence of the hazardous substance is continuous or frequent. Zone 2 represents a lower risk, where the substance is unlikely to be present or only present briefly.

 • **Division System (Combustible Dust and Gas/Vapor):** In the Division system, areas are classified into Divisions 1 and 2. Division 1 denotes that the hazardous substance is present during normal operations, while Division 2 means that the substance is present, but only under abnormal conditions or during maintenance.

Substance	Substance Class	Area Classification NEC500	Area Classification NEC505	Hazardous Location Characteristics
Gases/ Vapors	Class I (NEC 501)	Division 1	Zone 0	Explosion hazard present continuously or occasionally under normal operating conditions
		Division 1	Zone 1	
		Division 2	Zone 2	Ignitable concentrations of flammable gases or vapors are not normally present, but could be present in the case of a fault
Dusts	Class II (NEC 502)	Division 1	Zone 20	Combustible dusts are present in quantities sufficient to produce explosive and ignitable
		Division 1	Zone 21	
		Division 2	Zone 22	Combustible dust due to abnormal operations may be present in quantities sufficient to produce explosive or ignitable mixtures
Fibers	Class III (NEC 503)	Division 1	Not Equivalent	Easily ignitable fibers/flying are handled or manufactured
		Division 2		Easily ignitable fibers/flying are stored or handled

OIL & GAS

The importance of gas detection in oil operations cannot be overstated, as it plays a critical role in ensuring the safety of workers, preventing environmental incidents, and safeguarding valuable assets. There is a significant risk of encountering various gases, including which can be toxic, flammable, or explosive.

A robust gas detection system is essential for continuously monitoring the air quality in and around Upstream, Mid-Stream and Downstream Oil & Gas operations to detect and warn of excessive emissions, gas leaks or accidental releases. Early detection allows for immediate response, enabling the implementation of safety protocols and evacuation procedures if necessary.

COMMON GASES:
Combustible: Aviation Fuel, Butane, Diesel Fuel, Ethylene, Fuel Oils, Gasoline, Hydrogen, LPG, LNG, Methane/Natural Gas
Toxic: Ammonia, Benzene, Carbon Dioxide, Hydrogen Fluoride, Hydrogen, Sulfide, Oxygen, Sulfur Dioxide, Volatile Organic Compounds
Flame Detection

WATER & WASTEWATER

Water and wastewater facilities are essential infrastructures responsible for treating and managing water supplies, as well as processing wastewater for safe disposal or reuse.

The importance of gas detection in these facilities lies in ensuring the safety of workers, protecting the environment, and maintaining the efficiency of the treatment processes. By providing a real-time monitoring system, gas detection enhances safety, aids in environmental compliance, and enables prompt response to any gas-related incidents in water and wastewater facilities, ensuring the delivery of safe and clean water to communities while protecting the environment.

COMMON GASES:
Combustible: Methane/Natural Gas, Flammable Liquid Vapors
Oxygen Depletion: Aerobic & Anaerobic Consumption of Oxygen
Toxic: Ammonia, Chlorine, Hydrogen Fluoride, Hydrogen Sulfide, Ozone, Sulfur Dioxide

FOOD & BEVERAGE PROCESSING

Food and beverage processing facilities are crucial in transforming raw ingredients into consumable products.

The importance of gas detection in these facilities lies in ensuring the safety and quality of the food and beverages produced, as well as safeguarding the well-being of employees. Throughout the processing stages, various gases, including refrigerants, cooking fuels, and cleaning chemicals, are used, and potential leaks or releases of these gases can occur. A reliable gas detection system is essential for early identification of any hazardous gas incidents, enabling immediate response to prevent contamination of food products, ensuring compliance with safety standards, and protecting workers from potential health risks.

COMMON GASES:
Combustible: Methane/Natural Gas, Propane
Oxygen Depletion: Nitrogen/Oxygen
Toxic: Ammonia, Ammonia, Carbon Dioxide, Carbon Monoxide, Chlorine, Hydrogen Sulfide, Sulfur Dioxide

PHARMACEUTICAL

Pharmaceuticals refer to developing, producing, and distributing medications and medical drugs.

The importance of gas detection in the pharmaceutical industry is critical to ensure the safety and quality of the products and the protection of personnel. Pharmaceutical facilities often deal with various chemicals, solvents, and gases during drug synthesis, purification, and packaging processes.

A robust gas detection system is vital for monitoring potential leaks or releases of hazardous gases, including toxic or flammable substances.

COMMON GASES:
Combustible: Acetone, Methane/Natural Gas, Propane, Solvent Vapors
Toxic/Inert: Ammonia, Carbon Dioxide, Carbon Monoxide, Hydrogen Chloride, Nitrogen/Oxygen, Volatile Organic Compounds

EXTRACTION PROCESSING

The extraction process of cannabis involves isolating the desirable compounds, such as cannabinoids and terpenes, from the cannabis plant to produce concentrated oils, extracts, or other products.

The importance of gas detection in cannabis extraction lies in ensuring a safe working environment and high-quality end products. Many extraction methods utilize solvents, such as butane, ethanol, or carbon dioxide, to extract the desired compounds from the plant material. By providing early warning of gas levels exceeding safe thresholds, gas detection mitigates the risk of accidents, protects personnel, and ensures the production of safe and pure cannabis extracts for medicinal or recreational use.
Compliance with safety regulations and industry best practices is paramount, and gas detection plays a crucial role in achieving these goals during the cannabis extraction process.

COMMON GASES:
Combustible: Butane, Ethanol, Hexane, Propane
Toxic: Carbon Dioxide
Flame Detection

CNG VEHICLE BARNS

These facilities are responsible for maintaining and servicing CNG-powered buses, which utilize natural gas as a fuel source.

Implementing effective gas detection systems is crucial to mitigate the risks associated with CNG leaks or gas-related incidents and to ensure a safe working environment. CNG is highly flammable, and leaks can occur during maintenance or repair activities. Gas detectors continuously monitor the air quality and promptly detect the presence of flammable gases such as methane (CH_4). Gas detection plays a vital role in protecting the well-being of workers.

COMMON GASES:
Combustible: Methane/Natural Gas
Toxic: Carbon Monoxide, Nitrogen Dioxde
**Flame Detection**

HYDROGEN FUEL

Hydrogen fuel applications encompass a range of technologies and uses where hydrogen gas is utilized as a clean and sustainable energy source.

The importance of gas detection in hydrogen fuel applications is paramount to ensure the safe handling, storage, and utilization of hydrogen gas. Early detection of hydrogen leaks or releases allows for immediate response, ensuring the implementation of safety measures and preventing potential accidents, fires, or explosions. By providing continuous gas monitoring, gas detection systems enhance the safety and viability of hydrogen fuel applications, promoting the widespread adoption of hydrogen as a clean energy solution while safeguarding the well-being of individuals and the environment.

COMMON GASES:
Combustible: Hydrogen
Flame Detection
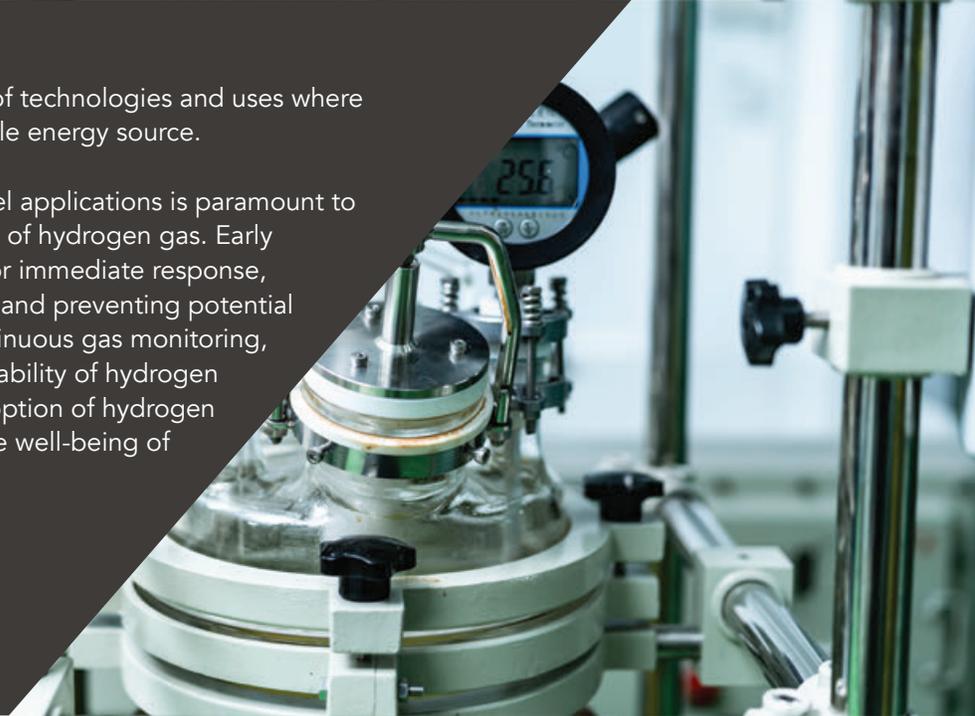
MANUFACTURING

Industrial manufacturing involves the large-scale production of goods using machinery, equipment, and various industrial processes.

The importance of gas detection in industrial manufacturing cannot be understated, as it is crucial for ensuring the safety of workers and protecting the integrity of the production processes. In manufacturing environments, there may be potential risks of leaks or releases of hazardous gases, such as combustible or toxic substances. A reliable gas detection system is essential for early identification of such incidents, allowing for immediate action to prevent accidents, fires, or explosions. By continuously monitoring the air quality, gas detection ensures that the manufacturing facility operates within safe limits, protecting the health and well-being of employees and preventing damage to equipment.

COMMON GASES:
Combustible: Application Specific
Inert: Argon, Helium, Nitrogen/Oxygen
Toxic: Application Specific
Flame Detection

RECYCLING CENTERS

A recycling facility is a crucial industrial site that processes and sorts recyclable materials to divert waste from landfills and promote environmental sustainability.

In such facilities, gas and flame detection are of utmost importance to ensure the safety of workers and protect the environment. The presence of various types of recyclable materials, some of which may be combustible or emit harmful gases, necessitates continuous gas detection to monitor for leaks or releases of hazardous substances. By promptly identifying such incidents, the gas detection system helps prevent potential health hazards and the risk of fires or explosions.

COMMON GASES:
Combustible: Diesel Fuel, Gasoline, Methane/Natural Gas, Propane, Paint & Solvent Vapors
Toxic: Carbon Monoxide, Nitrogen Dioxide, Volatile Organic Compounds
Flame Detection

LITHIUM-ION MFG & STORAGE

Lithium-ion batteries (Li-ion) are widely used in various applications, including consumer electronics, electric vehicles, and renewable energy storage, due to their high energy density, lightweight nature, and rechargeable capabilities. These batteries consist of a cathode, anode, separator, and electrolyte, with lithium ions moving between the electrodes during charging and discharging.

Gas detection is crucial in the application of lithium-ion batteries because these batteries can occasionally experience thermal runaway or overheating, leading to the release of gases. Thermal runaway can be caused by factors such as manufacturing defects, overcharging, or external damage. The gases released during such events include carbon dioxide (CO_2), carbon monoxide (CO), hydrogen (H_2) and flammable hydrocarbons.

COMMON GASES:
Combustible: Hydrogen, Methane/Natural Gas, Propane
Toxic: Carbon Monoxide, Carbon Dioxide
Flame Detection

LANDFILLS

Due to growing cities, old landfills are being converted into commercial or residential developments. Due to the dangers of methane seeping up through the ground the need to monitor methane levels is being required.

These landfills can have dangerous gases rising to the surface or accumulating in the area, primarily methane and/or hydrogen sulfide. High levels of methane can displace oxygen in the air resulting in an array of health issues and at high concentrations can be explosive.

Implementing robust gas monitoring systems helps prevent accidents, minimize environmental impact, and contribute to the sustainable management of waste.

COMMON GASES:
Combustible: Methane/Natural Gas, Paint & Solvent Vapors
Toxic: Carbon Dioxide, Carbon Monoxide, Hydrogen Sulfide, Nitrogen Dioxide, Volatile Organic Compounds
Flame Detection

AIRCRAFT HANGARS

An aircraft hangar and maintenance facility are essential structures used for housing, servicing, and repairing aircrafts.

Gas detection and flame detection are paramount in the facility to ensure the safety of personnel, aircraft, and equipment. Timely detection helps prevent fires or explosions, safeguarding both aircraft and personnel.

Flame detection systems are equally vital in quickly detecting and responding to any fire incidents, enabling swift action to contain or extinguish flames before they escalate and cause significant damage. Overall, the integration of gas and flame detection systems is essential for maintaining a secure and efficient aircraft hangar and maintenance facility.

COMMON GASES:
Combustible: Aviation Fuel, Natural Gas, Propane
Toxic: Carbon Monoxide, Nitrogen Dioxide, Volatile Organic Compounds
Flame Detection

PULP & PAPER

A pulp & paper mill is an industrial facility that converts wood or plant-based fibers into paper products through pulping, bleaching, papermaking, and finishing processes.

Gas detection holds paramount importance within the facility as it ensures employee safety by monitoring and preventing exposure to toxic or asphyxiating gases. Additionally, it aids in fire prevention by identifying combustible gases or vapors, contributes to process control and efficiency by detecting deviations, helps the facility comply with environmental regulations, protects equipment from corrosive gases, and enables early leak detection, ultimately ensuring a safe and efficient operation of the mill.

COMMON GASES:
Combustible: Methane/Natural Gas, Propane
Toxic: Ammonia, Chlorine Dioxde, Hydrogen Peroxide, Hydrogen Sulfide, Ozone, Sulfur Dioxde
Flame Detection

POWER GENERATION
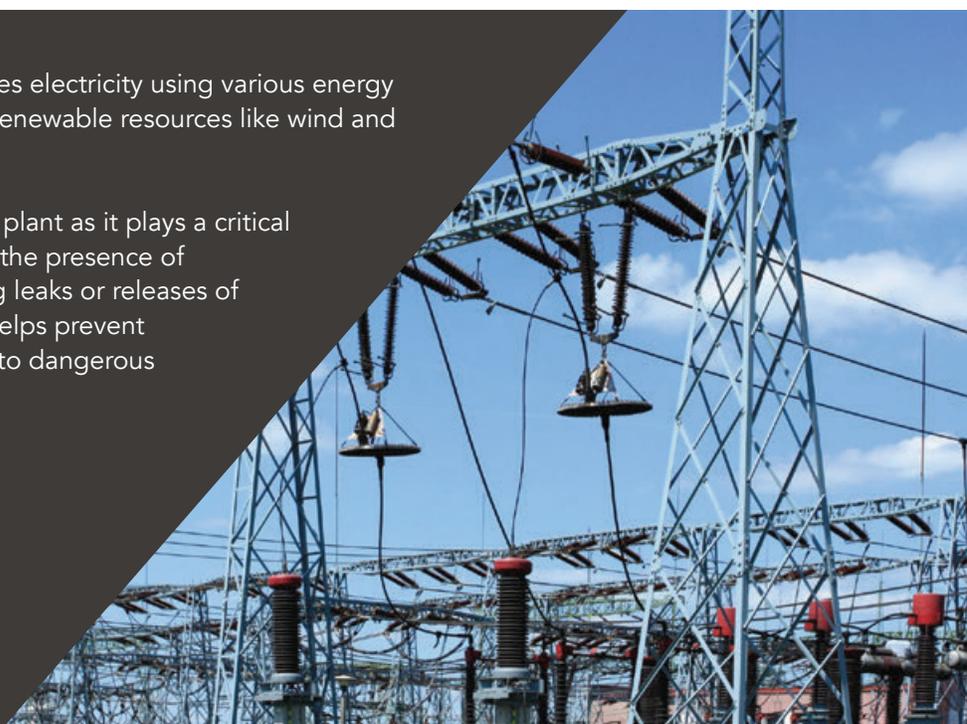
A power generation plant is a facility that produces electricity using various energy sources such as coal, natural gas, oil, nuclear, or renewable resources like wind and solar.

Gas detection is of utmost importance within the plant as it plays a critical role in safeguarding worker safety by monitoring the presence of potentially harmful gases. By promptly identifying leaks or releases of toxic or flammable gases, the detection system helps prevent accidents and protects personnel from exposure to dangerous substances.

COMMON GASES:
Combustible: Diesel Fuel, Gasoline, Hydrogen, Methane/Natural Gas
Toxic: Ammonia, Carbon Monoxide, Chlorine, Nitric Oxide, Nitrogen Dioxide, Sulfur Dioxide, Volatile Organic Compounds
Flame Detection

TRACXP CONTROL PANEL OVERVIEW

TXP-C20   TXP-C40   TXP-C16X   TXP-C64

TXP CONTROL PANEL FEATURES

	TXP-C20	TXP-C40	TXP-C16X	TXP-C64
Total Sensor Channels	2	4	16	64
Onboard Relays	2	2	5	5
Optional Add-on Relays	6	6	32	64
Total Relay Options	8	8	37	69
4-20mA Analog Outputs	UP TO 2	UP TO 4	UP TO 16	UP TO 64
4-20mA Analog Inputs	UP TO 2	UP TO 4	UP TO 16	UP TO 64
Modbus RS-485 Inputs	1 (ADD-ON)	1 (ADD-ON)	2 (STANDARD)	2 (STANDARD)
Embedded Webpage	NO	NO	YES	YES
Color Indicating Display	NO	NO	YES	YES

TRACXP FIXED TRANSMITTER OVERVIEW
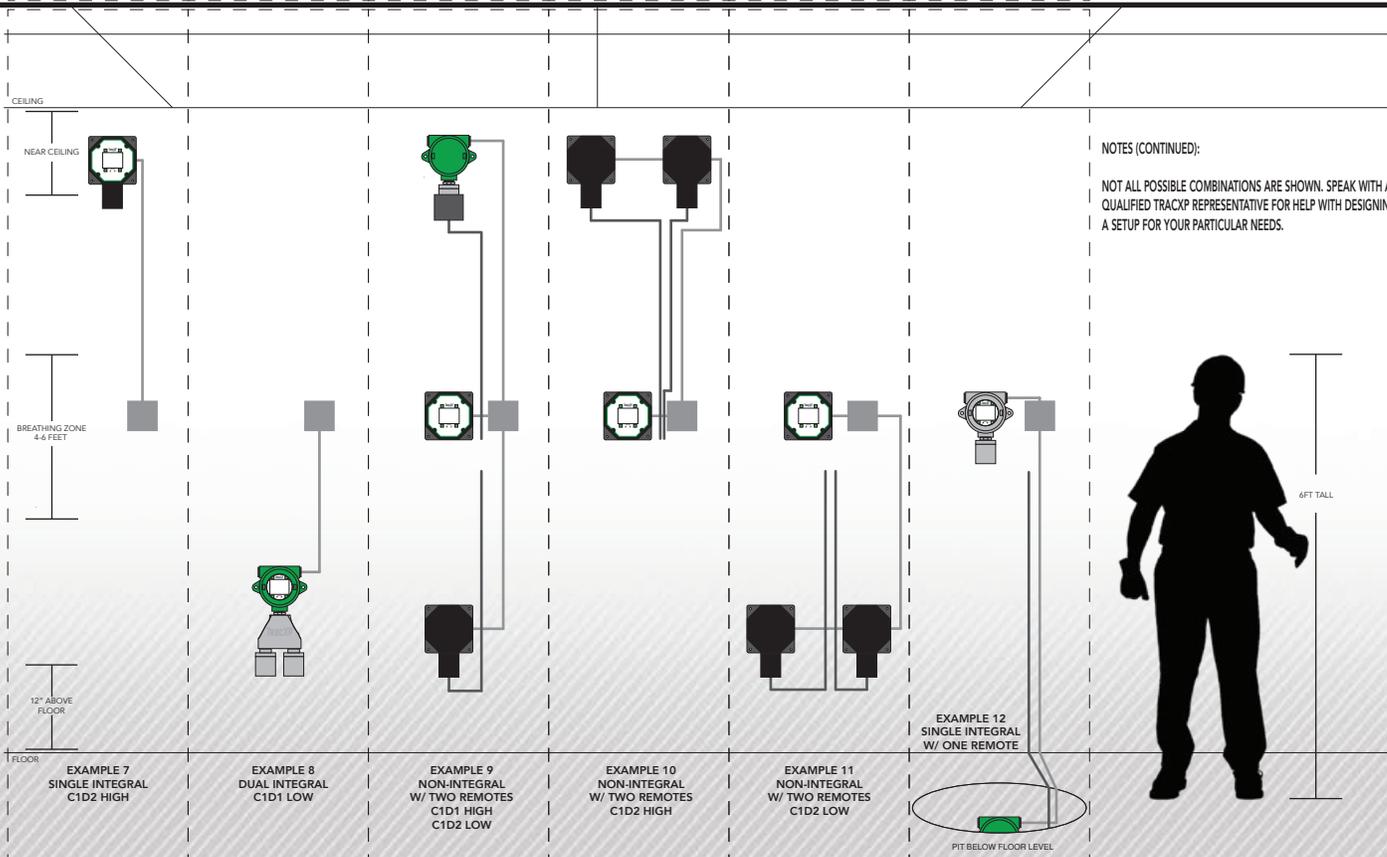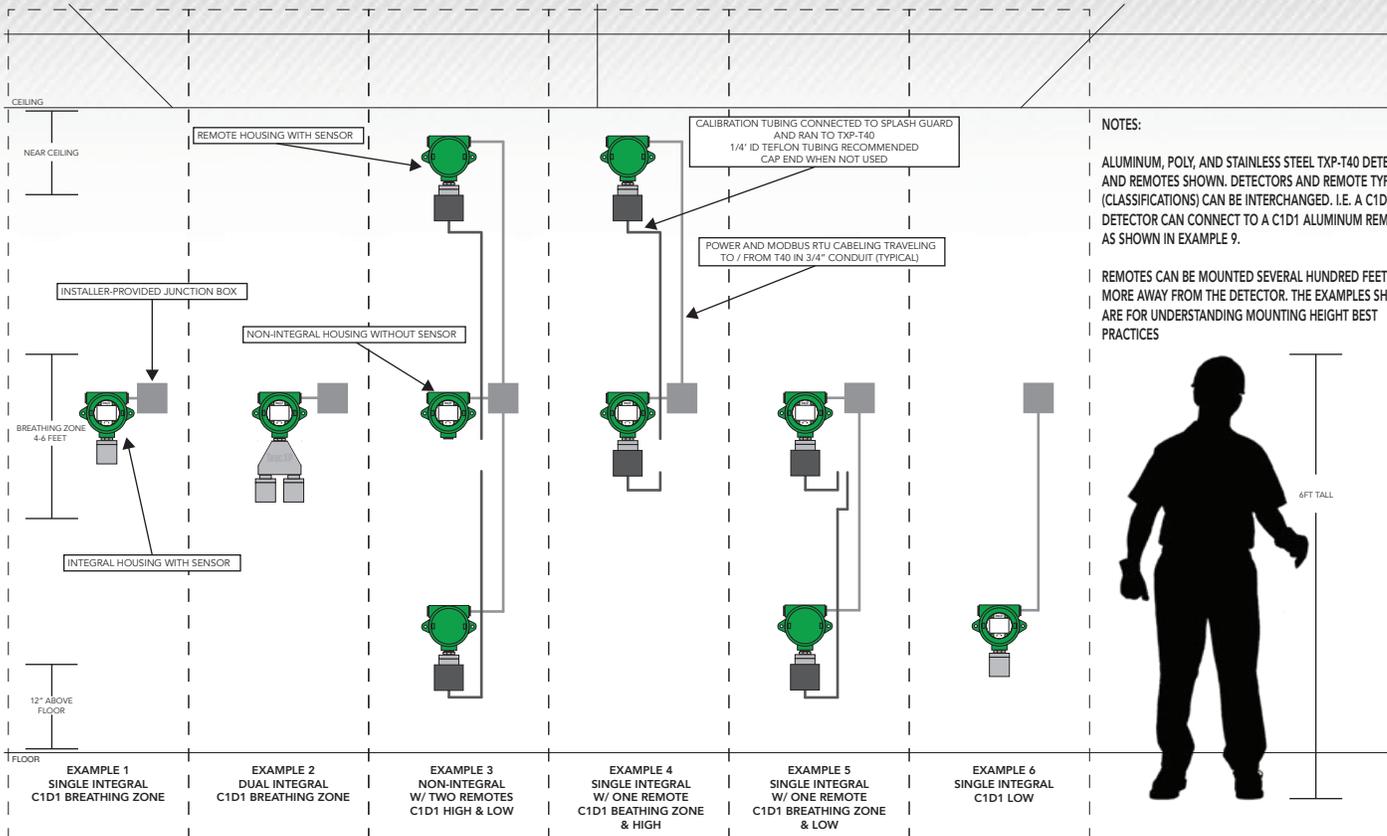
Fixed Monitoring

- Certified for Class 1, Div 1 or Div 2
- Status indicating Vivid Color QVGA backlit color TFT display
- Displays gas values, units of measurement, trend graphs and alarm levels
- LED alarm status indication
- Dual sensor capable
- Supports remote sensor applications
- Standard Ethernet port with web server
- Four configurable 5A relays
- Modbus® RS-485 output

STANDARD GAS OPTIONS & RANGES

Gas Name	Symbol	Range & Measurement	Vapor Density (kg/m³)	%LEL	%UEL	Recommend Mounting Height
Toxic Gases						
Ammonia	NH_3	0-100, 0-200, 0-300, 0-500 PPM	0.59	15	28	Roughly 12-18" from the ceiling
Carbon Dioxide	CO_2	0-5%, 0-100% VOL	1.842	NA	NA	Roughly 12-18" from the floor
Carbon Monoxide	CO	0-50, 0-200, 0-1,000, 0-2,000 PPM	1.14	12.5	74	Breathing Level 4-6"ft AFF
Chlorine	Cl_2	0-10, 0-50 PPM	2.898	NA	NA	Roughly 12-18" from the floor
Chlorine Dioxide	ClO_2	0-1 PPM	9.99	NA	NA	Roughly 12-18" from the floor
Hydrogen Chloride	HCl	0-100 PPM	1.6397	NA	NA	Roughly 12-18" from the floor
Hydrogen Cyanide	HCN	0-50 PPM	0.90	5.4	46	Roughly 12-18" from the ceiling
Hydrogen Fluoride	HF	0-40 PPM	0.92	NA	NA	Roughly 12-18" from the ceiling
Hydrogen Sulfide	H_2S	0-25, 0-50, 0-100, 0-200, 0-500, 0-1,000 PPM	1.53	4	44	Roughly 12-18" from the floor
Mercaptan	CH_3SH	0-10 PPM	1.60	4.1	21	Roughly 12-18" from the floor
Nitric Oxide	NO	0-100 PPM	1.249	NA	NA	Roughly 12-18" from the floor
Nitrogen Dioxide	NO_2	0-10, 0-20 PPM	3.66	NA	NA	Roughly 12-18" from the floor
Oxygen	O_2	0-25% VOL	1.331	NA	NA	Breathing Level 4-6"ft AFF
Ozone	O3	0-1, 0-20, 0-100 PPM	2.14	NA	NA	Roughly 12-18" from the floor
Sulfur Dioxide	SO2	0-20 PPM	2.26	NA	NA	Roughly 12-18" from the floor
Combustible Gases						
Combustible Various	Various	0-100% LEL	Gas Dependent	-	-	Gas Dependent
Acetylene	C_2H_2	0-100% LEL	1.092	2.5	100	Breathing Level 4-6"ft AFF
Ethylene	C_2H_4	0-100% LEL	1.18	2.7	28.6	Breathing Level 4-6"ft AFF
Hydrogen	H_2	**0-10,000 PPM**, 0-100% LEL	0.0899	4	75	Roughly 12-18" from the ceiling
Methane	CH_4	**0-100% LEL, 0-100% VOL**	0.55	5	15	Roughly 12-18" from the ceiling
Propane	C_3H_8	0-100% LEL	1.882	2.1	9.5	Roughly 12-18" from the floor
Volatile Organic Compounds	VOC	-	Gas Dependent	-	-	Gas Dependent

MOUNTING HEIGHTS

CEILING

NEAR CEILING

REMOTE HOUSING WITH SENSOR

CALIBRATION TUBING CONNECTED TO SPLASH GUARD
AND RAN TO TXP-T40
1/4' ID TEFLON TUBING RECOMMENDED
CAP END WHEN NOT USED

POWER AND MODBUS RTU CABELING TRAVELING
TO / FROM T40 IN 3/4" CONDUIT (TYPICAL)

INSTALLER-PROVIDED JUNCTION BOX

NON-INTEGRAL HOUSING WITHOUT SENSOR

BREATHING ZONE
4-6 FEET

INTEGRAL HOUSING WITH SENSOR

12" ABOVE
FLOOR

FLOOR

6FT TALL

NOTES:

ALUMINUM, POLY, AND STAINLESS STEEL TXP-T40 DETECTORS
AND REMOTES SHOWN. DETECTORS AND REMOTE TYPES
(CLASSIFICATIONS) CAN BE INTERCHANGED. I.E. A C1D2 POLY
DETECTOR CAN CONNECT TO A C1D1 ALUMINUM REMOTE
AS SHOWN IN EXAMPLE 9.

REMOTES CAN BE MOUNTED SEVERAL HUNDRED FEET OR
MORE AWAY FROM THE DETECTOR. THE EXAMPLES SHOWN
ARE FOR UNDERSTANDING MOUNTING HEIGHT BEST
PRACTICES

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3	EXAMPLE 4	EXAMPLE 5	EXAMPLE 6
SINGLE INTEGRAL	DUAL INTEGRAL	NON-INTEGRAL	SINGLE INTEGRAL	SINGLE INTEGRAL	SINGLE INTEGRAL
C1D1 BREATHING ZONE	C1D1 BREATHING ZONE	W/ TWO REMOTES	W/ ONE REMOTE	W/ ONE REMOTE	C1D1 LOW
		C1D1 HIGH & LOW	C1D1 BEATHING ZONE & HIGH	C1D1 BREATHING ZONE & LOW	

CEILING

NEAR CEILING

BREATHING ZONE
4-6 FEET

12" ABOVE
FLOOR

FLOOR

6FT TALL

NOTES (CONTINUED):

NOT ALL POSSIBLE COMBINATIONS ARE SHOWN. SPEAK WITH A
QUALIFIED TRACXP REPRESENTATIVE FOR HELP WITH DESIGNING
A SETUP FOR YOUR PARTICULAR NEEDS.

EXAMPLE 12
SINGLE INTEGRAL
W/ ONE REMOTE

PIT BELOW FLOOR LEVEL

EXAMPLE 7	EXAMPLE 8	EXAMPLE 9	EXAMPLE 10	EXAMPLE 11
SINGLE INTEGRAL	DUAL INTEGRAL	NON-INTEGRAL	NON-INTEGRAL	NON-INTEGRAL
C1D2 HIGH	C1D1 LOW	W/ TWO REMOTES	W/ TWO REMOTES	W/ TWO REMOTES
		C1D1 HIGH	C1D2 HIGH	C1D2 LOW
		C1D2 LOW		

FLAME DETECTION

Features:

- High immunity to a false alarm
- HD video output with an automatic HD video recording of fire events
- Data / event logger – alarms, faults, etc
- Built-in-test (BIT) automatic & manual self-test of window cleanliness & operation
- Window heater to avoid condensation & icing
- Tilt mounting bracket can be connected above or below detector (Tilt mount included)
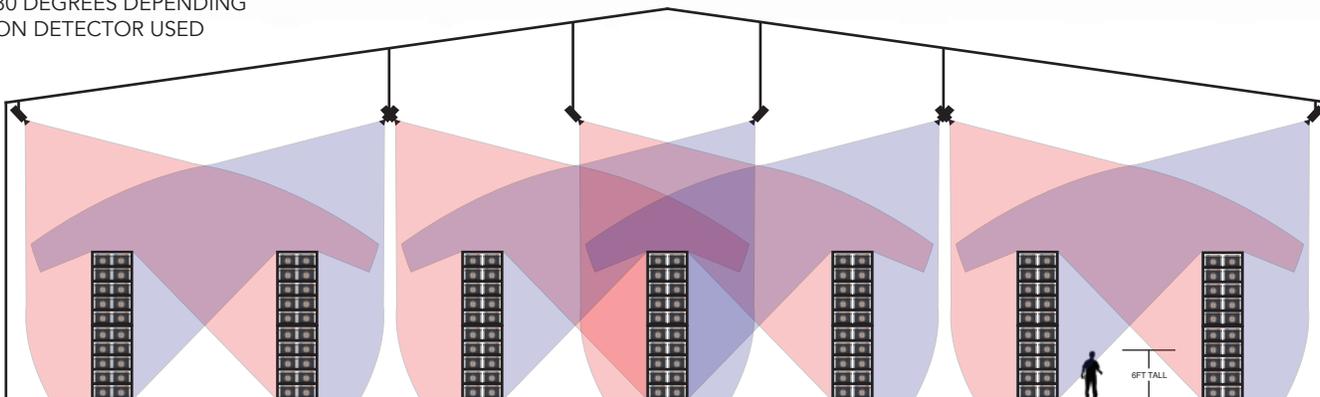- Top mount and competitive mount adapters available

Application	UV/IR	IR3	IR3-H2
Aircraft Hangars		Best	
Battery Backup, Energy Storage & Data Comm. Rooms	Good		Best
Biogas Manufacture & Storage	Good	Best*	
Transportation Depots	Good	Best	
Chemical, Fuel & Solvent Storage (Indoor)	Best*	Good	
Chemical, Fuel & Solvent Storage (Outdoor)	Good	Best*	
Clean Rooms	Best		
CNG Vehicle Filling & Maintenance Facilities		Best	
Conveyor Belts		Best*	
Engine Test Rooms (Diesel & Gasoline)	Good	Best	
Electric Power Transformers & Substations	Best*	Good	
Fume Hoods & Gas Cabinets	Best*	Good	
Hydrocarbon Storage & Processing	Good	Best	
Hydrogen Storage & Processing	Good		Best
Tanker Loading Racks	Good	Best	
Heating Rooms For Chemicals	Good	Best	
Hydraulics & Extruders	Good	Best	
Laboratories	Best*	Good	
Terminals: Truck, Rail, & Marine	Good	Best	
Machinery Operations	Best*	Good	
Pipeline Compressor Stations	Good	Best	
Paint Spray & Powder Coating Booths	Good	Best	
Recycling & Waste Processing Plants	Good	Best	
Wind Turbines & Associated Electrical Rooms	Best	Good	
Hybrid Service & Charging Stations	Good		Best
Warehouses	Good	Best	

*Applications may vary due to fuel source, materials and chemicals on site. Contact Macurco for guidance on model selection.
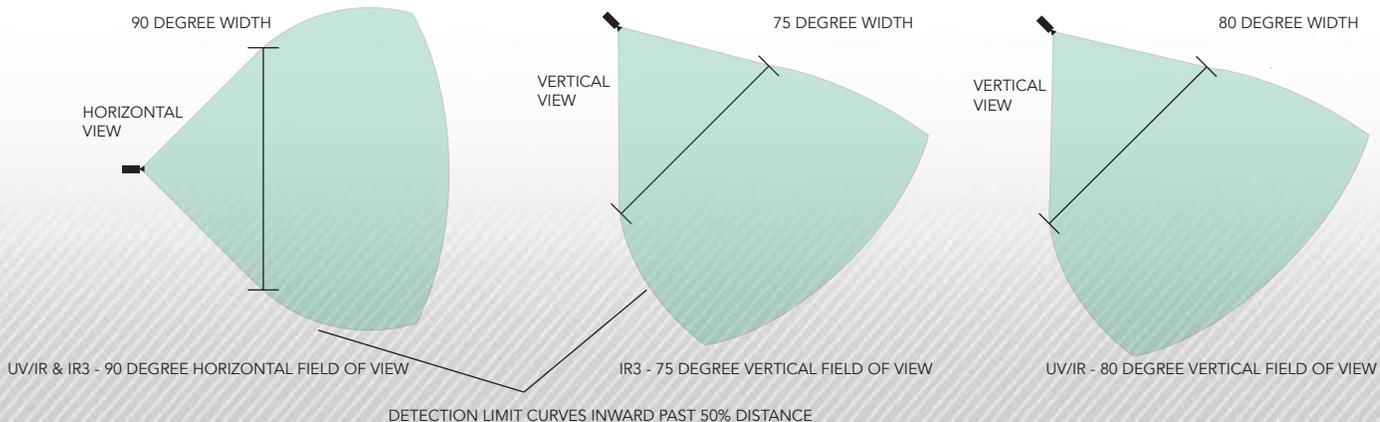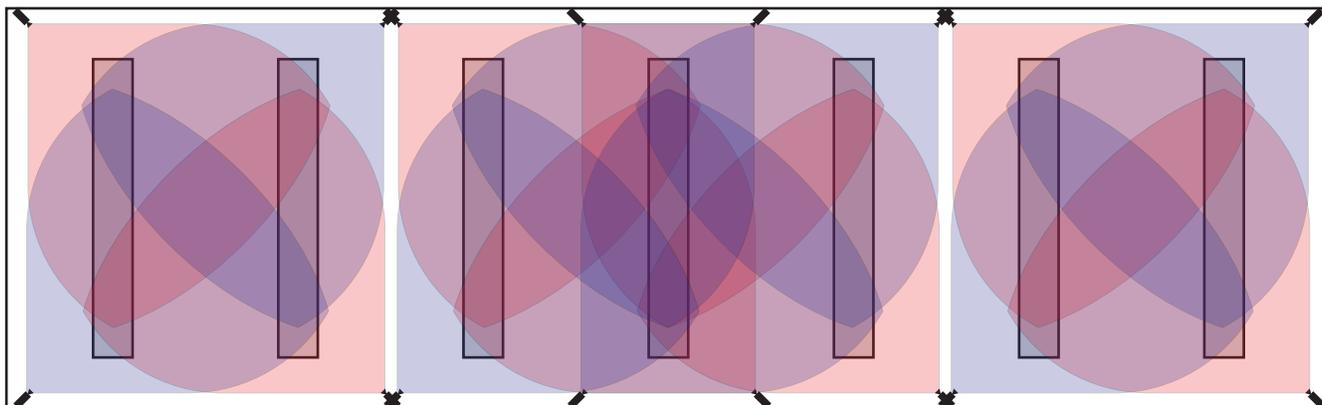
EXAMPLES OF DESIGNING A FLAME DETECTION SOLUTION

DETECTORS SHOULD BE PLACED AND AIMED FOR MAXIMUM COVERAGE OF SENSITIVE AREAS WITH ACCOUNT OF OVERLAP

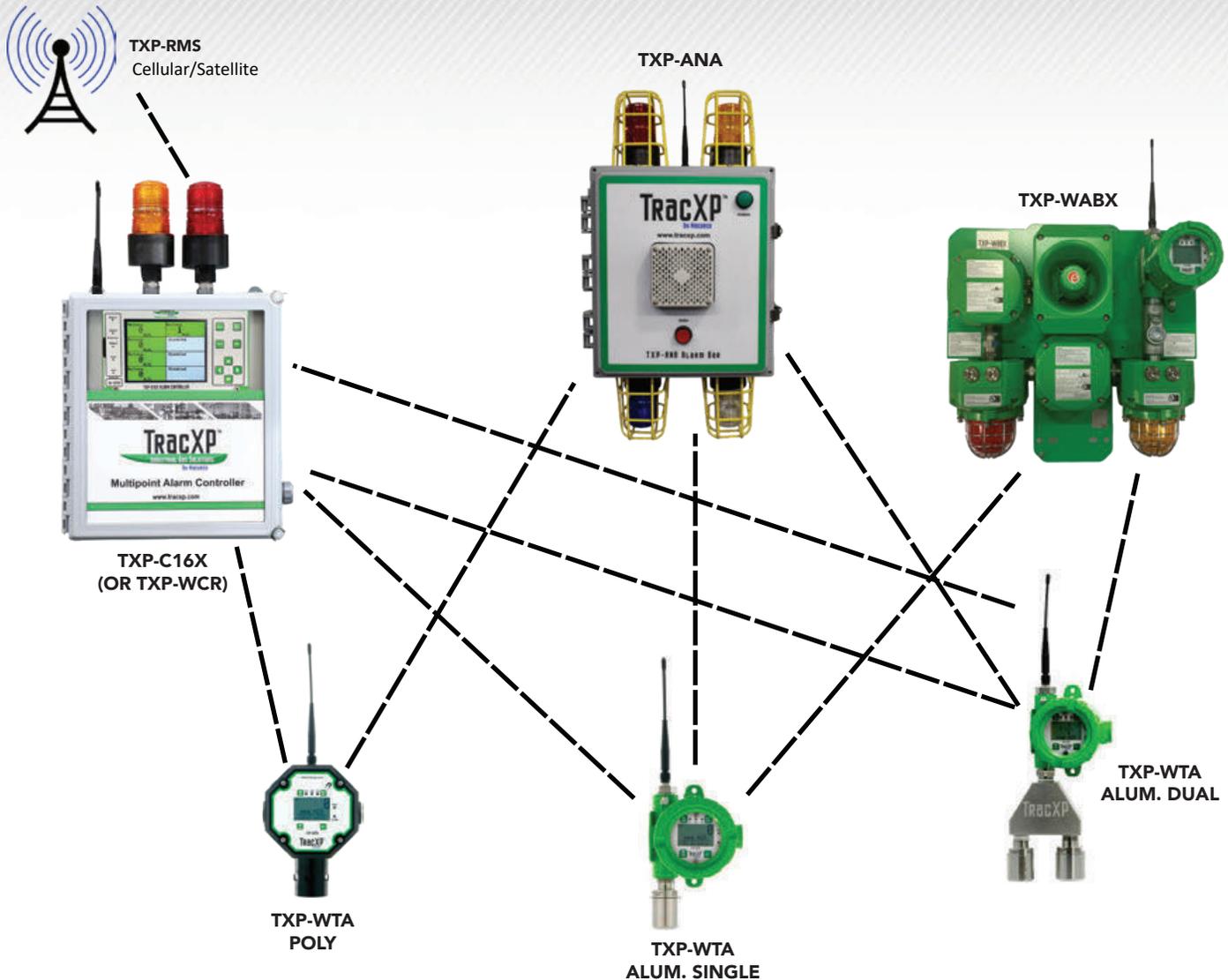FLAME DETECTOR TYPE USED DEPENDS ON POTENTIAL FLAME TYPE

VERTICAL COVERAGE 75 OR 80 DEGREES DEPENDING ON DETECTOR USED

6FT TALL

HORIZONTAL COVERAGE 90 DEGREES TYPICAL

90 DEGREE WIDTH

HORIZONTAL VIEW

75 DEGREE WIDTH

VERTICAL VIEW

80 DEGREE WIDTH

VERTICAL VIEW

UV/IR & IR3 - 90 DEGREE HORIZONTAL FIELD OF VIEW

IR3 - 75 DEGREE VERTICAL FIELD OF VIEW

UV/IR - 80 DEGREE VERTICAL FIELD OF VIEW

DETECTION LIMIT CURVES INWARD PAST 50% DISTANCE

TRACXP WIRELESS SOLUTIONS

TXP-RMS
Cellular/Satellite

TXP-ANA

TXP-WABX

TXP-C16X
(OR TXP-WCR)

TXP-WTA
POLY

TXP-WTA
ALUM. SINGLE

TXP-WTA
ALUM. DUAL

TXP-WCR Controller:
- 900 MHZ or 2.4 GHz radios
- Suitable for 12VDC solar power
- Wi-Fi -remote HMI functionality
- Non-volatile memory
- Up to 26 FHSS hopping patterns
- 8 programmable relays
- Real-time clock and calendar

TXP-WTA Transmitters:
- Robust 900 MHz or 2.4 GHz Radios
- Operates on "D" lithium battery (Std.)
  / Optional 12-24 VDC power board
- 4-20 mA input option
- Dual sensor capable w/ integral &
  remote sensor options
- Magnetic mount option
- Class 1, Div. 2 standard
- C1, D1 antenna options available
- Five LED indication (3) alarms (2)
  communication status
- Password provides menu security
- Multiple antenna options

TXP-WABX Notification:
- Suitable for Class 1, Division 2
  applications
- Ingress protection: NEMA 4X
- Communicates via 900MHz radio
  (two to three miles line of sight)
- Input voltage: 85 – 264VAC
- Includes 4" pipe mount kit (2)
- Horn nominal output: 112 dBA
  @ 1 M
- Selectable horn tone options: 64
- Red and amber strobes:
-    -   Energy: 10 joules (10Ws)
-    -   Flash rate: 1 Hz (60 fpm)

WIRELESS CONNECTIVITY OR INTEGRATION

There are many forms of wireless communication used within the TracXP product family.

900 MHz

900 MHz is a robust, license free (North America) radio band used for local communications and transmits up to two to three miles line-of-sight (LOS). This is how the interaction occurs between the Wireless Transmitter Assembly (TXP-WTA), the Wireless Control Receiver (TXP-WCR) and the Wireless Alarm Relay (TXP-WAR). The TXP-WAR is the core of our wireless notifcation, such as the Alarm Notification Assembly (TXP-ANA) or the Wireless Alarm Bar (TXP-WABX). If distance needs to be increased, a Wireless Radio Repeater (WRR) is available. Prior to installation and set up, all monitoring points should be validated for signal strength via the Signal Validation Tool (TXP-SVT).

Wi-Fi

Wi-Fi is a family of wireless network protocols commonly used for local area networking of devices and internet access. This is an add-on option for the TXP-WCR, and provides real-time notification of site-specific alarm and trouble conditions. Remote programming of alarm setpoints and other configurable options is also possible with this technology. Wi-Fi on the TXP-WCR uses the 2.4 GHz radio band.

Satellite

Satellite communciations utilize high frequency radio waves to enable data transmission in remote locations. Our Remote Monitoring Solution (TXP-RMS) delivers real-time field and operational intelligence for any wireless or wired gas detection system. The TXP-RMS is available in both non-hazardous and Class 1, Division 2 configurations, and provides users with a secure method for data collection and a convenient way to view and analyze it. This solution supports economical satellite transmission through communication of alarm and trouble events and exceptions in lieu of streaming data.
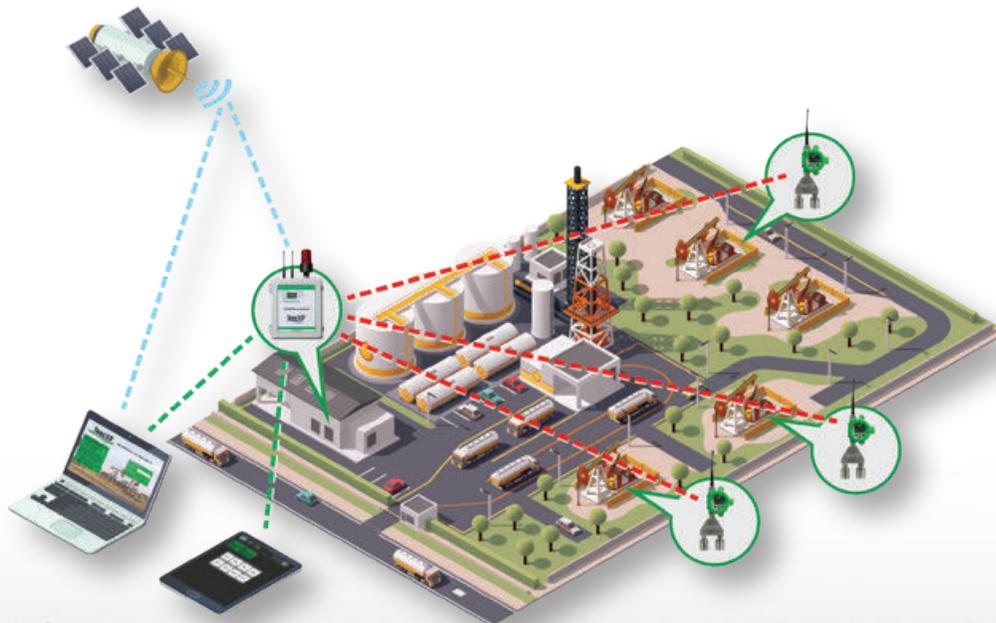

TXP-RMS features include:

• Automated Phone Callout (APC) function includes phone, text messaging and email communication

• Requires remote acknowledgment for callout cancellation

• Continuous datalogging provides historical event logging and data archival

• 24/7/365 real-time knowledge of what's happening, where and when

• Geographical mapping functionality provided through a user-friendly Graphical User Interface (GUI) supports multiple sites

TRACXP SAMPLE DRAW SOLUTIONS

Features:

- Suitable for Class 1, Div. 1 applications
- Supports single or dual-sensor configurations
- Utilizes all sensors within the TXP-T40 product offering
- Vivid status indicating color display
- Dedicated calibration port to allow calibrations at flow to ensure maximum accuracy
- Flow interruption indication
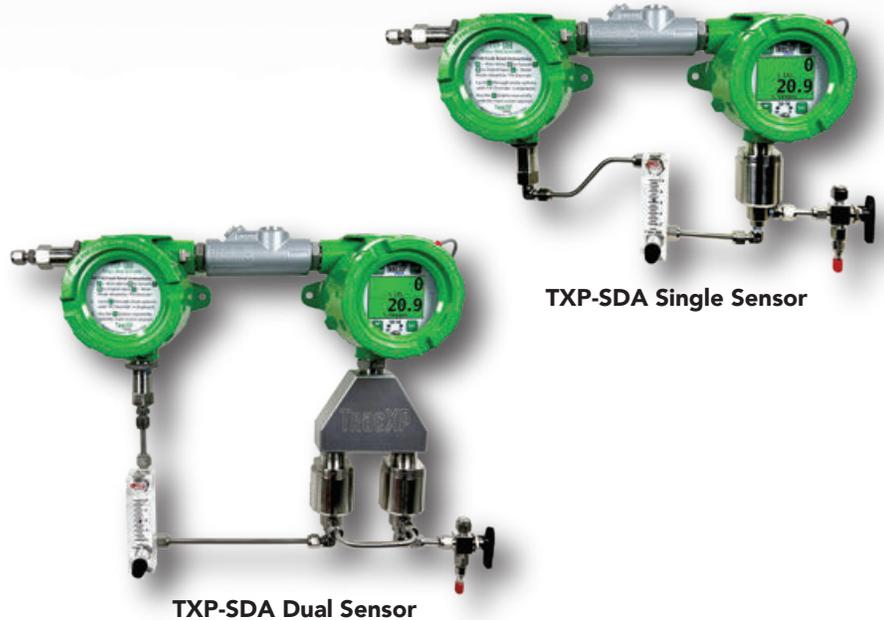
TXP-SDA Single Sensor

TXP-SDA Dual Sensor

AIMSAFETY PORTABLES

AimSafety by Macurco blends over 50 years of gas detection innovation and development into new, advanced gas monitor solutions that help organizations protect workers and the community, and increase safety, compliance and revenue.

Single-Gas Options: Carbon Monoxide (CO), Hydrogen Sulfide (H_2S), Oxygen (O_2), Ammonia (NH_3), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), or Hydrogen (H_2).
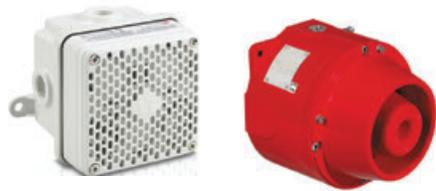
Multi-Gas: Hydrogen Sulfide (H_2S), Carbon Monoxide (CO), Oxygen (O_2) and Combustibles (LEL).

COMMON ACCESSORIES

COMBO ALARMS

STROBES

HORNS

CALIBRATION KITS

MAINTENANCE

DEMONSTRATION AND TRAINING

Macurco Representatives are available to assist in inspecting system components, verifying system operation and functionality, as well as verifying alarm set points and function. They're also available to provide product demonstrations and train personnel to adjust, operate, troubleshoot, calibrate, and maintain the gas detection system.

Calibration accessories and gases are recommended for all system installations and start-ups. Gas sensors & flame simulators are available for diagnostics, training, and operational verification purposes. Macurco Tech Support personnel are available for remote support and can be reached at 1-844-325-3050 or support@macurco.com.

MACURCO
GAS DETECTION

The Macurco product line offers equipment for industrial, commercial, and residential applications. Headquartered in Sioux Falls, South Dakota, Macurco strives to provide the highest quality detection, safety and security solutions to customers worldwide. Whether you are looking for monitoring specific gases in potentially hazardous environments, personal safety, building automation or HVAC system, or gas detection for a security system, Macurco has a gas detector to meet your needs.

Visit **www.macurco.com** for additional product information and training.

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